REMARKS

Claims 21, 23, and 28 are pending in the subject application. Claim 21 has been amended to clarify the claim. Claim 23 was cancelled, without prejudice to the prosecution of the subject matter in a subsequent application, in order to certain pursue embodiments of the invention for business purposes. Claims 29-32 were added as dependent claims that are encompassed by the present invention, and supported throughout the application including original claims 21, and 28 and the application at page 14, line 29-page 15, line 4; page 65, lines 15-19; page 76, lines 18-26. An Appendix with the instant claim set is provided for the Examiner's convenience, and shall not be construed as submission of a re-presented claim set under 37 CFR §1.121. No new matter was added by these amendments.

A. Objections Addressed from November 18, 2002 Office Action (OA)

(1) Objection of Specification Reference to Related Applications and Corresponding Priority

The specification was objected to because the provisional application number for the priority application filed on December 1, 2000 was not listed (OA, p.2), and the PCT application number for zcytor16 was not listed (OA, p. 3). At the time the instant application was filed, said provisional number and PCT application number were unknown. Applicant has amended the specification to supply the proper provisional application number 60/250,841 on page 1, and the proper PCT International Application Number PCT US00/32703 on page 104, as well as on pages 16-17, in order to correct the omission. Additionally, a typo was corrected in the paragraph on pages 16-17 (line 2). No new matter was added by these amendments. Consequently, the objections to the priority and specification should be properly withdrawn.

B. Rejections Addressed from November 18, 2002 Office Action (OA)

(1) Rejection of Claims 21, 23,and 28 under 35 U.S.C. 101 (Utility)

Claims 21, 23 and 28 were rejected under 35 U.S.C. §101 because the Office believes that "the claimed invention is not supported by either a specific and substantial utility or well-established utility." (OA, p. 3) As claim 23 was cancelled, this rejection is moot as applied thereto. Insofar as claim 21 and 28 are concerned, Applicant respectfully disagrees with the

contention that the methods of the present invention lack patentable utility, as Applicant has asserted specific utility and a well-established utility for the claimed methods in the specification. As such, Applicant believes the utility requirement is satisfied, and respectfully traverses this rejection of instant claims 21, and 28, and as may apply to newly added claims 29-32.

To be considered useful under 35 U.S.C. §101, an invention must have a specific, substantial and credible utility. It is well established "when a properly claimed invention meets at least one stated objective, utility under §101 is clearly shown." (*Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 958 (CAFC 1983)). That is, only a single utility for an invention needs be disclosed in a patent application to satisfy the 35 U.S.C. §101 utility requirement.

Section II.B.1(c)(1) of the January 5, 2001 "Utility Examination Guidelines" states "An invention has a well-established utility if a person of ordinary skill would immediately appreciate why the invention is useful based on the characteristics of the invention (e.g., properties...)" (66 FR 4, p. 1098). Moreover, "[a] patent examiner must accept a utility asserted by an applicant unless the Office has sound scientific reasoning to rebut the assertion." (66 FR 4, p. 1096) To establish a *prima facie* showing of lack of utility, "the Office must ... provide a sufficient evidentiary basis for factual assumptions relied upon in establishing the *prima facie* showing ... the PTO must do more than merely question operability - it must set forth factual reasons which would lead one of skill in the art to question the objective truth of the statement of operability." (MPEP 2107.01(IV)) In addition, and on point:

> [W]hen a patent application claiming a nucleic acid asserts a specific, substantial, and credible utility, and *bases the assertion upon homology to existing nucleic acids or proteins having an accepted utility*, the asserted utility *must be accepted* by the examiner *unless* the Office has *sufficient evidence or sound scientific reasoning to rebut such an assertion*. "[A] 'rigorous correlation' need not be shown in order to establish practical utility; 'reasonable correlation' is sufficient." (66 FR 4, p. 1096, emphasis added, original case reference omitted).

Applicant contends that the Office has not established a *prima facie* showing of lack of utility, nor provided sound scientific reasoning to rebut the assertion of utility in the application. As detailed below, one of skill in the art upon reading the specification would appreciate that ZCYTO18 is a pro-inflammatory cytokine, and that the methods of using polynucleotides the present invention are useful because it is asserted in the specification that

such polynucleotides can be used as a marker for a specific human chromosomal locus, 12q15, or to detect inflammation, or to detect activated T-cells.

These utilities are specific for the methods of using polynucleotides the present invention, as discussed below. Applicant has provided evidence that such utility is asserted in the specification. The Office has provided absolutely no evidence to the contrary, or valid scientific basis, as to why the asserted useful methods as disclosed in the application is not reasonable to a skilled artisan. Therefore, the Office has not established a *prima facie* showing of lack of utility, nor sound scientific reasoning to rebut the assertions of utility in the application. The invention indeed has a specific asserted and a well-established utility for the claimed polynucleotides that are supported by the specification. Consequently, the 35 U.S.C. §101 rejection of claims 21, 28 and as it may apply to newly added claims 29-32, should be properly withdrawn.

(a) Claims 21, and 32: Method of using Polynucleotides as a Chromosomal 12q15 Marker

The specification asserts the methods of using polynucleotides the present invention to detect chromosomal abnormalities in a specific region of human chromosome 12q15. The instant claims 21 and 32 are drawn to such methods. As disclosed in the specification (see, page 76, line 12 to page 78, line 16, and page 78, line 25 to page 80, line 26) the polynucleotides of the present invention can serve as a marker for human chromosome 12q15 abnormalities. As further disclosed in the specification and known by one of skill in the art, applicant emphasizes that knowledge of such chromosomal abnormalities are useful in genetic counseling (page 77, lines 23-24), and for assessing chromosomal defects (see, page 76, line 12 to page 78, line 16, and page 78, line 25 to page 80, line 26). Because gross chromosomal aberrations (such as chromosomal translocations and breakage) at chromosome 12q15 are clearly associated with human disease, it is not unreasonable to conclude the polynucleotides of the present invention that map to the specific 12q15 locus can be used specifically as a marker for said 12q15 chromosomal aberrations related to known human disease.

Contrary to the beliefs of the Office, Applicant has indeed asserted a specific utility for the claimed polynucleotides of the present invention. Moreover, it is well settled in the

art how to use such polynucleotides as probes to detect and analyze chromosomal aberrations in chromosome 12q15 as discussed and enabled in the specification (page 78, line 16, and page 78, line 25 to page 80, line 26). Moreover, said utility is substantial and credible, as it is well known in the art that markers for genetic diseases and chromosomal abnormalities are sought after, and they are currently used in present day medicine to detect genetic aberrations, or carriers to those susceptible to genetic disease, or to assist physicians in analyzing disease. The Office has presented no evidence to the contrary to refute that the polynucleotides of the present invention could be used as a specific chromosomal marker for 12q15. As such, the Office has not established a *prima facie* showing of lack of utility.

Moreover, one of skill in the art would at the time of filing would recognize that large chromosomal abnormalities such as translocations, rearrangements, breakage and loss in and around the 12q15 region of chromosome 12, are evident in human disease, as asserted in the application e.g., from page 77, line 3-22. As such, one of skill in the art would recognize that claimed methods for using the inventive polynucleotide probes are particularly useful for detection of gross chromosomal abnormalities associated with loss of heterozygosity (LOH), translocation, rearrangements, large deletions and insertions, chromosome gain (e.g. trisomy), DNA amplification, and the like, and such uses are asserted in the specification (see, page 76, line 12 to page 78, line 16, and page 78, line 25 to page 80, line 26). The Office has presented no evidence to the contrary to refute that the polynucleotides of the present invention could be used as a specific chromosomal marker for 12q15. As such, the Office has not established a *prima facie* showing of lack of utility.

In addition, Applicant emphasizes that such methods of using the inventive *polynucleotides* are independent of the use or function of the ZCYTO18 polypeptide itself. These methods of using the polynucleotides of the present invention for a marker for chromosome aberrations at 12q15, and do not apply to methods of using polynucleotides generally, but are specific of the methods of using the specific polynucleotides of the present invention. Furthermore, this utility is well-established, as one of ordinary skill would immediately appreciate why the invention is useful based on the characteristics of the invention (e.g., because of the property of these polynucleotides having a 12q15 chromosomal

localization). The Office has presented no evidence to the contrary to refute that the polynucleotides of the present invention could be used as a specific chromosomal marker for 12q15. As such, the Office has not established a *prima facie* showing of lack of utility.

Claim 21, and dependent claims thereon are indeed supported by an asserted specific utility that is substantial and credible. This is all 35 U.S.C. §101 requires. Consequently, the rejection of claims 21, and 28, and as may apply to newly added claims 29-32 should be properly withdrawn.

(b) Claims 28, and 31: Method of using Polynucleotides to detect Inflammation

The specification asserts the methods of using polynucleotides the present invention to detect inflammation. The instant claims 28 and 31 are drawn to such methods, as disclosed in the specification (see, page 8, line 28, to page 9, line 17). As further disclosed in the specification and recognized by one of skill in the art, the polynucleotides of the present invention are expressed in activated T-cells (particularly CD3+ T-Cells) and such T-cells are important mediators of inflammation as asserted in the specification (e.g., see, page 14, line 29 to page 15, line 4; and page 65, line 15-19; and Example 3, page 85) and the polypeptides of the present invention are shown to be pro-inflammatory in animals (see, pages 67, line 19, to page 68, line 10, particularly page 67 , lines 20-22). Because the speciation clearly asserts that ZCYTO18 polynucleotides are expressed in pro-inflammatory cells, and the polypeptides are shown *in vivo* to be pro-inflammatory, the asserted methods of using polynucleotides the present invention to detect inflammation are entirely reasonable.

Contrary to the beliefs of the Office, Applicant has indeed asserted a specific utility for the claimed polynucleotides of the present invention. As such, one of skill in the art would recognize that claimed methods for using the inventive polynucleotide probes are particularly useful for detecting inflammation. The Office has presented no evidence to the contrary to refute the assertions in the specification or to contradict that one of ordinary skill would immediately appreciate that the invention is useful based on the characteristics of the invention (e.g., because of the cells in which ZCYTO18 is expressed (activated T-cells) and that the molecule is pro-inflammatory). The Office has presented no evidence to the contrary to

refute that the polynucleotides of the present invention could be used to detect inflammation. As such, the Office has not established a *prima facie* showing of lack of utility.

Claim 28, and dependent claims thereon are indeed supported by an asserted specific utility that is substantial and credible. This is all 35 U.S.C. §101 requires. Consequently, the rejection of claims 21, and 28, and as may apply to newly added claims 29-32 should be properly withdrawn.

(c) Claims 29, and 30: Method of using Polynucleotides to detect activated T-cells

The specification asserts the methods of using polynucleotides the present invention to detect activated T-cells. The instant claims 29 and 30 are drawn to such methods. As further disclosed in the specification and recognized by one of skill in the art, the polynucleotides of the present invention are expressed in activated T-cells (particularly CD3+ T-Cells) and such T-cells are important mediators of inflammation as asserted in the specification (e.g., see, page 14, line 29 to page 15, line 4; and page 65, line 15-19; and Example 3, page 85) and the polypeptides of the present invention are shown to be pro-inflammatory in animals (see, pages 67, line 19, to page 68, line 10, particularly page 67 , lines 20-22). Because the speciation clearly asserts that ZCYTO18 polynucleotides are expressed in activated T-cells, the asserted methods of using polynucleotides the present invention to detect activated T-cells are entirely reasonable.

Contrary to the beliefs of the Office, Applicant has indeed asserted a specific utility for the claimed polynucleotides of the present invention. As such, one of skill in the art would recognize that claimed methods for using the inventive polynucleotide probes are particularly useful for detecting activated T-cells. The Office has presented no evidence to the contrary to refute the assertions in the specification or to contradict that one of ordinary skill would immediately appreciate that the invention is useful based on the characteristics of the invention (e.g., because of the cells in which ZCYTO18 is expressed (activated T-cells)). The Office has presented no evidence to the contrary to refute that the polynucleotides of the present invention could be used to detect activated T-cells. As such, the Office has not established a *prima facie* showing of lack of utility.

Claim 29, and dependent claims thereon are indeed supported by an asserted specific utility that is substantial and credible. This is all 35 U.S.C. §101 requires. Consequently, the rejection of claims 21, and 28, and as may apply to newly added claims 29-32 should be properly withdrawn.

Claims 21, and 28 are indeed supported by an asserted specific utility that is substantial and credible. This is all 35 U.S.C. §101 requires. Consequently, the rejection of claims 21, and 28, and as may apply to newly added claims 29-32 should be properly withdrawn.

(2) Rejection of claims 21, 23, and 28 under 35 U.S.C. §112, First Paragraph (utility)

Claims 21, 23, and 28 were rejected under 35 U.S.C. §112, First Paragraph "since the claimed invention is not supported by either a specific or substantial asserted utility or a well established utility...one of skill in the art clearly would not know how to use the claimed invention." (OA, p. 6). As claim 23 was cancelled, this rejection is moot as applied thereto. The Office believes that one skilled in the art would not know how to use the claimed invention because it is alleged that the claimed invention is not supported by either a specific and substantial utility or a well established utility, citing the reasons set forth in the rejection under 35 USC § 101.

This ground of rejection is traversed. All claims are believed to be supported by either a specific and substantial asserted utility or a well established utility for the reasons discussed in Part B(1) above.

The methods of the present invention are useful, such uses are asserted in the specification, and therefore one of skill in the art could make and use the invention. This is all 35 U.S.C. §112, First Paragraph requires. Consequently, the rejection under 35 U.S.C. §112, First Paragraph, of claims 21, and 28, and as may apply to newly added claims 29-32 should be properly withdrawn.

(3) Rejection of Claim 28 under 35 U.S.C. 102 (b)

(a) Anticipation of claim 28 by Parham et al.

Claim 28 were rejected under 35 U.S.C. 102 (b) as being anticipated by Parham et al. (OA, page 6-7) Applicant respectfully submits that the Parham et al. reference is not available as prior art under 35 U.S.C. §102. As such, Applicant requests that the rejection of claim 28, and as may apply to newly added claim 31, be properly withdrawn. Applicant believes the instant claims are free of the art, and respectfully traverses this rejection of claim 28, and as may apply to newly added claim31.

Parham et al., was published on December 7, 2000, which is less than 1 year prior to Applicants filing of the instant application (December 22, 2000). Consequently, Applicant believes that the rejection under 35 U.S.C. 102 (b) is incorrect, and that the rejection should have been under 35 U.S.C. 102 (a). Applicant requests clarification of this rejection, and is responding as if the rejection is under 35 U.S.C. 102 (a), as there is no evidence that the Parham reference "was patented or described in a printed publication... more than one year prior to the date of the application for patent" as required under 35 U.S.C. 102 (b).

Applicant respectfully submits the Provisional Application US 60/172,105, filed December 23, 1999, and the provisional application US 60/250,841 filed December 1, 2000 as evidence that the Parham, et al. reference is not available as prior art under 35 U.S.C. §102(a). These applications are the provisional applications on which priority of the instant patent application is based and are hence part of the record and therefore not additionally supplied with this response. Applicant will provide additional copies of these documents upon request by the Office.

In particular, Applicant presents that the filed patent applications that serve as priority for the above-referenced application show constructive reduction to practice of the methods of using ZCYTO18 polynucleotides to detect inflammation prior to Parham's publication. The Parham et al., reference is, therefore, not available as prior art under 35 U.S.C. §102(a).

In Provisional Application US 60/172,105, filed December 23, 1999, Applicant disclosed in the specification and as recognized by one of skill in the art, that the polynucleotides

of the present invention are expressed in activated T-cells (particularly CD3+ T-Cells) and such T-cells are important mediators of inflammation as asserted in the specification (e.g., see, page 12, lines 8-15, and page 62, lines 25-28; and Example 3, page 78) in addition to the disclosed methods of using polynucleotides as probes for expressed polynucleotides. As such the Provisional Application US 60/172, 105, filed December 23, 1999 describes methods of using ZCYTO18 polynucleotides to detect inflammation prior to Parham's publication. As such, Applicant has provided evidence of using ZCYTO18 polynucleotides to detect inflammation prior to the publication of the Parham et al., reference. The Parham et al., reference is, therefore, not available as prior art under 35 U.S.C. §102(a).

Moreover, in Provisional Application US 60/250,841 filed December 1, 2000, Applicant disclosed in the specification and as recognized by one of skill in the art, that the polynucleotides of the present invention are expressed in activated T-cells (particularly CD3+ T-Cells) and such T-cells are important mediators of inflammation as asserted in the specification (e.g., see, page 12, lines 8-15, and page 63, lines 24-27; and Example 3, page 77) as well as showing that the polypeptides of the present invention are pro-inflammatory in animals (E.g., Example 11 page 94-95), in addition to the disclosed methods of using polynucleotides as probes for expressed polynucleotides. And, specifically on point, the Provisional Application US 60/250,841 filed December 1, 2000 describes methods of using ZCYTO18 as a reagent or target (including polynucleotides) to detect inflammation prior to Parham's publication: "*Thus, ZCYTO18* and its receptors *are suitable reagents/targets for the diagnosis* and treatment in variety of disorders, *such as inflammation*, immune disorders, infection, anemia, hematopoietic and other cancers, and the like." (US 60/250,841; page 94 line 30 to page 95, line 2; emphasis added). As such, Applicant has provided evidence of using ZCYTO18 polynucleotides to use diagnostically, i.e. to detect, inflammation prior to the publication of the Parham et al., reference. The Parham et al., reference is, therefore, not available as prior art under 35 U.S.C. §102(a).

In view of the evidence and remarks above, Applicant respectfully requests that rejections of instant claim 28, and as it may apply to newly added claim 31, under 35 U.S.C. §102(a) be withdrawn.

Early reconsideration and allowance of the pending claims is respectfully requested. If the Patent Examiner believes that a telephone interview would expedite prosecution of this patent application, please call the undersigned at (206) 442-6676.

Respectfully Submitted,
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Enclosures:

Amendment Fee Transmittal (in duplicate)
Petition and Fee for 3 Month Extension of Time (in duplicate)
Appendix (2 pages)
Postcard